

**SONY®**

# White paper

November 2012



**XPERIA SX**  
SO-05D

# Purpose of this document

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Sony product White papers are intended to give an overview of a product and provide details in relevant areas of technology.

## Document history

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### Version

|               |                         |           |
|---------------|-------------------------|-----------|
| July 2012     | First released version  | Version 1 |
| August 2012   | Second released version | Version 2 |
| August 2012   | Third released version  | Version 3 |
| November 2012 | Fourth released version | Version 4 |

## Sony Mobile Developer World

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For the latest technical documentation and development tools, go to <http://developer.sonymobile.com/wp>.

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## Signature features

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The Sony Xperia™ SX comes with a range of features as standard. Below is a summary of the key signature features.

### Xperia™ Timescape™

#### Communication made easy

The Timescape™ application manages all your communication with one person in one place. You can effortlessly browse by category your Facebook™ and Twitter™ communications, as well as view your photos. Now everything is all together and in chronological order, so you don't have to open different applications to see what's going on.

### Xperia™ infinite button

#### Everything you want – from everywhere

Tap the infinite button in the Timescape™ application and smart filter each category of communication by person. For example, when viewing a text message from a friend in Timescape™, tap the infinite button to view a list of all chat messages with that friend.

### Xperia™ Local connectivity

#### More control over your media

Using Xperia™ Local connectivity, you can exercise more control over how media files get transferred and stored. For example, you can select MTP mode to transfer files if you want to limit the risk of data corruption or select MSC mode if you want to have more control over the data storage.

### Xperia™ Home screen application

#### The place you call Home

Customise your Home screen with widgets, shortcuts, folders, themes, wallpaper and other items. Which is the best for you? Email top right? Music player bottom left? You decide. With four extensions to your Home screen, you've got plenty of space to put things where you want. Just remember to flick left or right to find them.

# Facts – dimensions, weight, performance and networks

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|                          |  |
|--------------------------|--|
| <b>Operating system</b>  | Google™ Android™ 4.0.x (Ice Cream Sandwich)    |
| <b>Processor</b>         | 1.5 GHz Qualcomm Snapdragon™ MSM8960 Dual core |
| <b>GPU</b>               | Adreno™ 225                                    |
| <b>Size</b>              | 115 x 54 x 9.4 mm                              |
| <b>Weight</b>            | 95 grams                                       |
| <b>Available colours</b> | Black<br>Orange<br>Pink<br>White               |
| <b>Main screen</b>       |  |
| Colours                  | 16,777,216 colour TFT                          |
| Resolution               | 540x960 pixels (qHD)                           |
| Size (diagonal)          | 3.7 inches                                     |
| Scratch-resistant        | Shatter proof sheet on scratch-resistant glass |
| <b>Input mechanisms</b>  |  |
| Text input               | on-screen 50-character keyboard                |
| Touch screen             | Capacitive                                     |
| Touch gesture            | Yes – multi-touch, up to 10 fingers supported  |
| <b>Memory</b>            |  |
| RAM                      | 1 GB   |
| Flash memory             | Up to 4 GB                                     |
| Expansion slot           | microSD™ card, up to 32 GB                     |
| <b>Camera</b>            |  |
| Camera resolution        | 8.1 MP   |
| Digital zoom             | 16x  |
| Photo flash              | Yes – Pulsed LED                               |
| Video recording          | Yes – HD 1080p                                 |
| Front Camera             | Yes – VGA                                      |
| <b>Sensors</b>           |  |
| Accelerometer            | Yes  |
| Proximity sensor         | Yes  |

|                             |   |
|-----------------------------|---|
| Ambient light sensor        | Yes   |
| Magnetometer                | Yes   |
| Gyroscope                   | Yes   |
| <b>Networks</b>             |   |
| SO-05D                      | LTE 2100 (Band I)<br>HSPA 800 (Band VI), 800 (Band XIX), 2100 (Band I)<br>GSM 850/900/1800/1900 |
| <b>Data transfer speeds</b> |   |
| GSM GPRS                    | Up to 86 kbps (download)  |
| GSM EDGE                    | Up to 237 kbps (download)   |
| UMTS HSPA cat 6 (upload)    | Up to 5.7 Mbps  |
| UMTS HSPA cat 10(download)  | Up to 14 Mbps   |
| LTE cat3                    | Up to 25 Mbps (upload), up to 75 Mbps (download)  |
| <b>Talk time</b> (GSM)      | Up to 6 hours**   |
| <b>Standby time</b> (GSM)   | Up to 280 hours**   |
| <b>Talk time</b> (UMTS)     | Up to 5 hours 50 min.**   |
| <b>Standby time</b> (UMTS)  | Up to 360 hours**   |
| <b>Music listening time</b> | Up to 18 hours 10 min.**  |
| <b>Video playback time</b>  | Up to 4 hours**   |
| <b>Embedded Battery</b>     | 1500 mAh Minimum  |

*\*\* Talk time/Standby time (GSM/UMTS) is according to the operator's condition for Battery Life Measurement.*

**NOTE:** Battery performance may vary depending on network conditions and configurations, and phone usage.

**NOTE:** Performance metrics measured under laboratory conditions.

## Categorised feature list

|   |   |  |
|---|---|--|
|  <p><b>Camera</b></p> <ul style="list-style-type: none"> <li>3D Sweep Panorama</li> <li>8.1 megapixel camera</li> <li>16x digital zoom</li> <li>Auto focus</li> <li>Face detection</li> <li>Front-facing camera (VGA)</li> <li>Geotagging</li> <li>HD video recording (1080p)</li> <li>Image stabiliser</li> <li>Flash/LED</li> <li>Flash/Photo light</li> <li>Scene detection</li> <li>Red-eye reduction</li> <li>Send to web</li> <li>Self-timer</li> <li>Smile detection</li> <li>Sony Exmor R™ for mobile image sensor</li> <li>Touch capture</li> <li>Touch focus</li> <li>Video light</li> <li>Video recording</li> <li>Video stabiliser</li> <li>White balance</li> </ul> |  <p><b>Music</b></p> <ul style="list-style-type: none"> <li>Album art</li> <li>Bluetooth™ stereo (A2DP)</li> <li>Music tones (MP3/AAC)</li> <li>PlayNow™ service*</li> <li>SensMe™</li> <li>TrackID™ music recognition*</li> <li>“WALKMAN” application</li> <li>xLoud™ Experience</li> </ul> |  <p><b>Internet</b></p> <ul style="list-style-type: none"> <li>Bookmarks</li> <li>Google Maps™ for Mobile with Google Latitude™ and Street View*</li> <li>Google Play™</li> <li>Google™ search*</li> <li>Google Voice™ Search*</li> <li>NeoReader™ barcode scanner</li> <li>Pan &amp; zoom</li> <li>Web browser (WebKit™)</li> </ul>  |
|  <p><b>Communication</b></p> <ul style="list-style-type: none"> <li>Call list</li> <li>Google Talk2™ application*</li> <li>Facebook™ application*</li> <li>Noise Suppression</li> <li>Xperia™ Timescape™</li> <li>Speakerphone</li> <li>Twitter™ (Timescape™ integration)*</li> <li>Vibrating alert</li> </ul>   |  <p><b>Messaging</b></p> <ul style="list-style-type: none"> <li>Conversations</li> <li>Email</li> <li>Google Mail™*</li> <li>Handwriting recognition</li> <li>Instant messaging</li> <li>Predictive text input</li> <li>Text messaging (SMS)</li> </ul>                                    |  <p><b>Design</b></p> <ul style="list-style-type: none"> <li>Auto rotate</li> <li>Gesture input</li> <li>Gyroscope</li> <li>On-screen 12-key keyboard</li> <li>On-screen QWERTY keyboard</li> <li>on-screen 50-character keyboard</li> <li>HD Reality Display with Sony Mobile BRAVIA® ENGINE</li> <li>Screenshot capturing</li> <li>Touch screen</li> <li>Picture wallpaper</li> </ul> |

|   |   |  |
|---|---|--|
|    |    |   |
| <p><b>Entertainment</b></p> <p>3D games<br/>Digital TV (1 seg)<br/>Media browser<br/>Motion gaming<br/>PlayStation® Certified<br/>Radio (FM radio with RDS)<br/>Sony Entertainment Network*<br/>TV launcher<br/>Video streaming<br/>YouTube™*</p> | <p><b>Organiser</b></p> <p>Alarm clock<br/>Airplane mode<br/>Calculator<br/>Calendar<br/>Contacts<br/>Document readers<br/>E-manual<br/>FeliCa<br/>Infinite button<br/>OfficeSuite Pro<br/>Setup guide<br/>Widget manager</p> | <p><b>Connectivity</b></p> <p>3.5 mm audio jack (CTIA)<br/>aGPS*<br/>Bluetooth™ technology<br/>DLNA Certified®<br/>GLONASS*<br/>HDMI support via MHL<br/>IrDA™<br/>Media Transfer Protocol support<br/>Micro USB support<br/>Modem<br/>Native USB tethering<br/>PC Companion<br/>Synchronisation via Microsoft® Exchange ActiveSync®<br/>Synchronisation via SyncML™<br/>Synchronisation via Google™<br/>Synchronisation via Facebook™<br/>TV Out<br/>USB High speed 2.0 support<br/>Wi-Fi®<br/>Wi-Fi® Hotspot functionality</p> |

\* This service is not available in all markets.

# Technologies in detail

**NOTE:** The information outlined below is general and levels of compliance to standards and specifications may vary between products and markets. For more information, contact Sony Mobile Developer World or your Sony contact person where applicable.

## Device-to-device communications (local)

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### Bluetooth™ wireless technology

|  |   |
|--|---|
| Bluetooth™ profiles supported            | Advanced Audio Distribution Profile v1.2<br>Audio/Video Remote Control Profile v.1.3<br>Handsfree Profile v1.5<br>Headset Profile v1.1<br>Human Interface Device Profile v1.1<br>Object Push Profile v1.1<br>Personal Area Networking Profile v1.0<br>Phonebook Access Profile v1.1<br>Serial Port Profile v1.1 |
| Core version and supported core features | Version 3.1   |
| Connectable devices                      | Products supporting at least one of the profiles above.   |

More information:

<http://developer.sonymobile.com/wp>

[www.bluetooth.com](http://www.bluetooth.com)

## IrDA

|                            |                            |
|----------------------------|----------------------------|
| Data transfer rate         | IrDA SIR: up to 115.2 kbps |
| Maximum transfer data size | No restriction             |

| <b>Data Communication</b>    |  |
|------------------------------|--|
| <b>Sending Data</b>          | <b>Comment</b>   |
| Contacts (include MyProfile) | The phone has supported for the transmission of one or all contacts, including MyProfile.<br>Contacts are transferred in vCard format.                     |
| Picture/Movie                | The phone has supported for the transmission of single a file.<br>Supported formats are according to DoCoMo specification.<br>(vNote format is supported.) |
| Others                       | vCard/vMessage/vCalendar formats supported some applications provided by DoCoMo are supported.   |
| <b>Received Data</b>         | <b>Comment</b>   |
| Contacts                     | The phone has supported for the reception of one or all contacts. Contacts can be received in vCard format.  |
| Picture/Movie                | The phone has supported for reception of a file. Supported formats are according to DoCoMo specification (vNote format is supported).                      |
| Others                       | Files in non-supported formats are not stored.<br>vCard/vMessage/vCalendar formats supported some applications provided by DoCoMo are supported.           |

## FeliCa™

|                      |                                     |
|----------------------|-------------------------------------|
| Mobile FeliCa Client | Ver 2.2.0                           |
| Card mode            | Yes                                 |
| R/W                  | Yes (Internal card / External card) |
| Ad-hoc               | Yes                                 |
| FALP                 | Yes                                 |

## Wi-Fi®

|                     |   |
|---------------------|---|
| Supported standards | IEEE 802.11 a/b/g/n and Wi-Fi®  |
| Connectable devices | Wi-Fi® access points  |
| Frequency band      | 2.4 GHz/5 GHz   |
| Data transfer rate  | Up to 150 Mbit/s  |
| Security            | WEP 64 bit<br>WEP 128 bit<br>Wi-Fi Direct<br>TKIP<br>CCMP (AES)<br>Open Authentication<br>Shared Authentication<br>EAP-SIM<br>EAP-TLS<br>EAP-TTLS/MSCHAPv2<br>PEAPv0/EAP-MSCHAPv2<br>PEAPv1/EAP-GTC<br>WPA Personal and WPA2 Personal<br>WPA Enterprise and WPA2 Enterprise |
| Encryption          | WEP, TKIP and AES   |
| Power save          | WMM-UAPSD<br>QoS, WMM/WMM-PS  |
| Auto setup          | WPS   |

## DLNA Certified® (Digital Living Home Alliance)

|                          |  |
|--------------------------|--|
| Supported Device Classes | <p><b>M-DMS – Mobile Digital Media Server</b><br/> Media Types: images, video and music<br/> Summary: The digital media server exposes the media files in your phone to a Wi-Fi® network. The files can then be accessed from other DLNA Certified® clients.</p> <p><b>+PU+</b><br/> Media Types: image, video and music<br/> Summary: Play media in the phone on another device, such as a TV or computer using 2-box push technology. +PU+ is integrated into the Gallery and Music applications.</p> <p><b>M-DMP – Mobile Digital Media Player</b><br/> Media Types: image, video and music<br/> Summary: Play content stored on another device, for example, a server or a PC, directly on the phone.</p> <p><b>+DN+</b><br/> Media Types: image, video and music<br/> Summary: Download content stored on another device, for example, a server or a PC, and play the downloaded content directly on the phone.</p> |
| Supported Bearers        | Wi-Fi®   |
| DRM Support              | The Sony DLNA Certified® implementation does not support DRM-protected content.  |

# Messaging

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## Email

|                  |   |
|------------------|---|
| Bearer type (IP) | GPRS, EGPRS, UMTS   |
| Character sets   | BIG5 Traditional Chinese<br>GB18030<br>ISO-2022-JP Japanese<br>ISO-8859-1<br>ISO-8859-2 Eastern Europe<br>ISO-8859-5 Cyrillic<br>ISO-8859-7 Greek<br>ISO-8859-9 Turkish<br>ISO 8859-11<br>KOI8-R Cyrillic<br>Shift_JIS Japanese<br>USASCII<br>UTF-16<br>UTF-8<br>Windows® 874<br>Windows® 1251 Cyrillic<br>Windows® 1252<br>Windows® 1254 Turkish<br>Windows® 1258 Vietnamese |
| Protocols        | POP3 and IMAP4  |
| Push email       | Microsoft® Exchange ActiveSync® (EAS)   |
| Secure email     | SSL/TLS, both port methods (POPS/IMAPS) and START-TLS   |
| HTML mail        | Yes (read only)   |

### More information:

<http://developer.sonymobile.com/wp>

[www.openmobilealliance.org](http://www.openmobilealliance.org)

## Positioning – location based services

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Supported standards:

- OMA Secure User Plane Location (SUPL) v2.0
- 3GPP™ Control Plane location (excluding Emergency location)
- Qualcomm® GPSOneXTRA™

Supported satellite systems:

- GPS
- GLONASS\*

\* **NOTE:** GPS and GLONASS are used together to calculate the position. Positioning is more robust and accurate in most conditions, if both systems are active. The benefits of using GLONASS are automatically available for all applications using the Satellite Positioning API ("GPS location Provider" in Android terminology).

## Provisioning (OMA CP)

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OMA CP version 1.1

## Multimedia (audio, image and video)

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| <b>Audio Playback</b>  | <b>Decoder format</b>   | <b>Supported in file format</b>           |
|------------------------|---|---|
|                        | Audio decoding MPEG-1/2/2.5, audio layer 3                                    | MP3 (.mp3), 3GPP (.3gp), MP4 (.mp4, .m4a) |
|                        | AAC, AAC+, eAAC+  | 3GPP (.3gp), MP4 (.mp4)                   |
|                        | AMR-NB, AMR-WB  | 3GPP (.3gp), MP4 (.mp4)                   |
|                        | General MIDI (GM)   | SMF (.mid)                                |
|                        | FLAC  | FLAC (.flac)                              |
|                        | Linear PCM 16bit  | WAV (.wav)                                |
|                        | OTA   | OTA (.ota)                                |
|                        | Ogg vorbis  | Ogg vorbis (.ogg)                         |
|                        | PIFF  | PIFF (.isma)                              |
| <b>Audio Recording</b> | <b>Encoder format</b>   | <b>Supported in file format</b>           |
|                        | AMR-NB, AMR-WB  | 3GPP (.3gp)                               |
|                        | AAC-LC stereo, sample rate 48 kHz bit rate up tp 384 kbps                     | 3GPP (.3gp, .3gpp)<br>MP4 (.mp4, .m4a)    |
| <b>Image Playback</b>  | <b>Decoder format</b>   | <b>Supported in file format</b>           |
|                        | 1, 4, 8, 16, 24 and 32 bpp and RLE encoded formats                            | BMP (.bmp)                                |
|                        | Single and multi-frame, bitmap mask support (GIF87a format and GIF89a format) | GIF (.gif)                                |
|                        | New Image format provided by Google for the web                               | WEBP (.webp)                              |
|                        | Joint Photographic Experts Group  | JPEG (.jpg)                               |
|                        | Portable Network Graphics Bitmap mask support                                 | PNG (.png)                                |
| <b>Image Capture</b>   | <b>Encoder format</b>   | <b>Supported in file format</b>           |
|                        | Joint Photographic Experts Group  | JPEG (.jpg)                               |

| <b>Video Playback</b>        | <b>Decoder format</b>   | <b>Supported in file format</b>                             |
|------------------------------|---|---|
|                              | MPEG-4 Visual Simple Profile, Advanced Simple Profile Level 6   | 3GPP (.3gp), MP4 (.mp4)                                     |
|                              | H.264 Baseline/Main/High Profile Level 4  | 3GPP (.3gp), MP4 (.mp4)                                     |
|                              | H.263 Profile 0, Profile 3 Level 70   | 3GPP (.3gp)   |
|                              | VP8   | WebM (.webm, .mkv)  |
|                              | PIFF  | PIFF (.ismv)  |
| <b>Video Recording</b>       | <b>Encoder format</b>   | <b>Supported in file format</b>                             |
|                              | Video H.263 Profile 0, H.264 Baseline Profile<br>Audio: AAC-LC stereo, sample rate 48 kHz bit rate 128 kbps, AMR-NB mono, sample rate 8 kHz bit rate 5.2 kbps | 3GPP (.3gp), MP4 (.mp4)                                     |
| <b>Audio/Video Streaming</b> | Streaming transport   | RTSP according to 3GPP™<br>HTTP streaming                   |
| <b>DRM</b>                   | DRM (Digital Rights Management) – features the rights and copy protection of downloaded content   | OMA DRM 1.0<br>Marlin DRM<br>PlayReady™<br>Widevine Level 3 |

## Digital TV (1seg)

|                       |               |
|-----------------------|---------------|
| Data Broadcasting     | Supported     |
| Caption               | Supported     |
| Recording             | Not supported |
| Viewing reservation   | Not supported |
| Recording reservation | Not supported |
| G-Guide application   | Supported     |

## Synchronisation (OMA DS, EAS, Google Sync™)

OMA Data Synchronisation protocol versions 1.1.2 and 1.2

OMA Data Formats: vCard 2.1, vCalendar 1.0

Microsoft® Exchange ActiveSync® protocol version 2.5

Microsoft® Exchange ActiveSync® protocol version 12

Microsoft® Exchange ActiveSync® protocol version 12.1

Microsoft® Exchange ActiveSync® protocol version 14.0

Microsoft® Exchange ActiveSync® protocol version 14.1

Google Sync™

Related information:

<http://developer.sonymobile.com/wp>

## Web browser

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|                      |  |
|----------------------|--|
| Browser version      | Android 4.0 Browser (Based on WebKit™)   |
| Navigation/rendering | Pan & Zoom<br>Landscape/portrait rendering<br>Full page PC rendering   |
| Search               | Internet search  |
| Browser compliancy   | HTML version 4.0<br>HTML version 5.0<br>XHTML Basic version 1.0<br>XHTML 1.1<br>CSS 2.0<br>CSS 2.1<br>CSS 3.0<br>JavaScript 1.7/ECMA-script 262 3rd edition<br>WebGL 1.0<br>DOM 2.0<br>DOM 3.0 |
| Supported Device API | Geo-location API   |
| Protocol compliancy  | HTTP/1.1<br>TLS 1.0 and SSL 3.0<br>Gzip<br>OMA Download 1.0  |

Related information:

<http://developer.sonymobile.com/wp>

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